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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/082,770      | 02/25/2002  | George G. Barclay    | 51064               | 4422             |

21874 7590 06/01/2004

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EXAMINER

THORNTON, YVETTE C

ART UNIT PAPER NUMBER

1752

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/082,770

Applicant(s)

BARCLAY ET AL.

Examiner

Yvette C. Thornton

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cb

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 41-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This is written in reference to application number 10/082770 filed on February 25, 2002 and published as US 2003/0031949 A1 on February 13, 2003.

#### *Response to Amendment*

1. Claims 1-40 have been cancelled. Claims 41-59 are currently pending.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

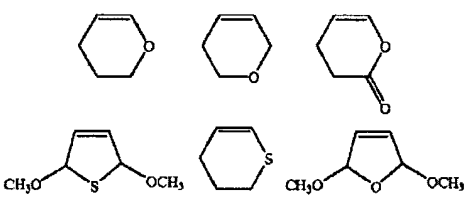
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 41-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Barclay et al. (US 6,306,554 B1).
4. Barclay teaches polymers that contain a heterocyclic ring, preferably an oxygen-containing or sulfur-containing ring. The heterocyclic ring is preferably fused to the polymer backbone (c. 2, l. 40-45). Preferred polymers of the taught invention also contain a carbon alicyclic group that is fused to the polymer backbone such as optionally substituted norbornene groups (c. 2, l. 46-56). Norbornene meets the limitations of instant claim 44 and 45. For use in photoresist compositions, polymers of the taught invention also will contain one or more units that comprise photoacid labile moieties such as methyladamantyl (meth)acrylate and 8-ethyl-8-tricyclodecanyl (meth)acrylate (c. 2, l. 66-c. 3, l. 21), which

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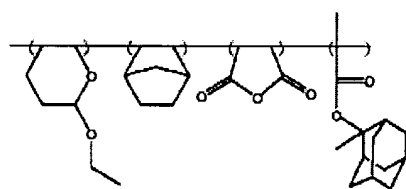
meet the limitations of instant claims 43 and 49. Preferred polymers contains 3, 4 or 5 distinct repeat units (c. 3, l. 32-35). Polymers of the invention are employed in photoresists imaged at 193 nm and thus must be substantially free of any aromatic group (c. 3, l. 36-49). The taught polymers may also contain additional units such as cyano units, lactone units and anhydride units such as maleic anhydride, which is preferred to provided fused anhydride polymer units (c. 9, l. 42-64; c. 11, l. 43-c. 12, l. 8; c. 14, l. 12-13). Suitable vinyl heterocyclic monomers that can be polymerized to provide polymers of the taught invention

include the following:

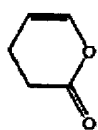


(c. 14, l. 20-42). It is the

examiner's position that the third said monomer meets the limitations of monomer having a ring oxygen adjacent to a vinyl group, specifically the first listed compound of instant claim 42. Example 1-2 exemplifies a copolymer having the structure:



Maleic anhydride also meets the limitations of an additional heterocyclic group having non-hydrogen ring substituents. Although not exemplified, one of ordinary skill in the art would readily envisage a polymer from the small list of 6 possible choices, similar to that of example 1-2 comprising a monomer of compound



instead of the exemplified substituted



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The taught polymers are highly useful as a resin binder component in photoresist compositions. Photoresists of the taught invention generally comprise a photoactive component and the taught polymers. The said composition also comprises a photoacid generator that is suitably employed in an amount sufficient to generate a latent image in the coating layer of the resist upon exposure to activating radiation (c. 14, l. 52-65). The resist composition is suitably applied to substrates conventionally used in processes involving coating with photoresists. For example, the composition may be applied over silicon wafers, ceramic, quartz or glass substrates (c. 16, l. 36-43). Following coating, the composition is dried by heating to remove excess solvent. Thereafter it is imaged through a mask in conventional manner. The film layer is the post-exposure baked and developed. The film is rendered positive working by employing a polar developer such as TMAH (c. 16, l. 44-c. 17, l. 23).

5. The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

#### *Response to Arguments*

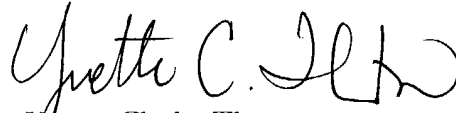
6. The amendment to the instant claims was sufficient to overcome the prior art rejections over Nozaki et al. (US 6,013,416 A) and Jung (US 6,132,926 A). The said rejections are hereby withdrawn in lieu of the new rejections set forth above.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
8. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:30 pm.
10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information

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for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Yvette C. Thornton". The signature is fluid and cursive, with the first name "Yvette" being more prominent than the last name "Thornton".

Yvette Clarke Thornton  
Patent Examiner  
Art Unit 1752

yct  
May 27, 2004